

PALISADES RV PARK (PWS 7100122)
SOURCE WATER ASSESSMENT FINAL REPORT

June 30, 2004



State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for the Palisades RV Park drinking water source is based on a land use inventory within a 1,000-foot radius of the well source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live.

This report, Source Water Assessment for Palisades RV Park (PWS # 7100122) describes the public drinking water system, the associated potential contaminant sources located within a 1,000-foot boundary around the drinking water source, and the susceptibility that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the Palisades RV Park water system.**

The Palisades RV Park is located along Highway 26, near Palisades Reservoir, in Bonneville County (see Figure 1). The non-community transient water system has two wells: Well #1 that is used for irrigation only, and Well #2 for drinking water. Due to this information, the susceptibility analysis in this report is focused on Well #2. Water quality tests conducted for the well do not show detections of total coliform bacteria from July 1999 through September 2003. However, there have been detections of nitrate within the sampled well water, at levels greater than ½ the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) as set by the EPA. Detections greater than ½ the MCL require a special mention in the consumer confidence report.

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The final susceptibility ranking for the well is high for IOCs, VOCs, SOCs, and microbial contamination. Lack of well logs causes many of the scoring questions to be conservatively scored higher. If well logs could be provided, the scores may be reduced. A copy of the susceptibility analysis for the Palisades RV Park well along with maps showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

FIGURE 1. Geographic Location of Palisades RV Park

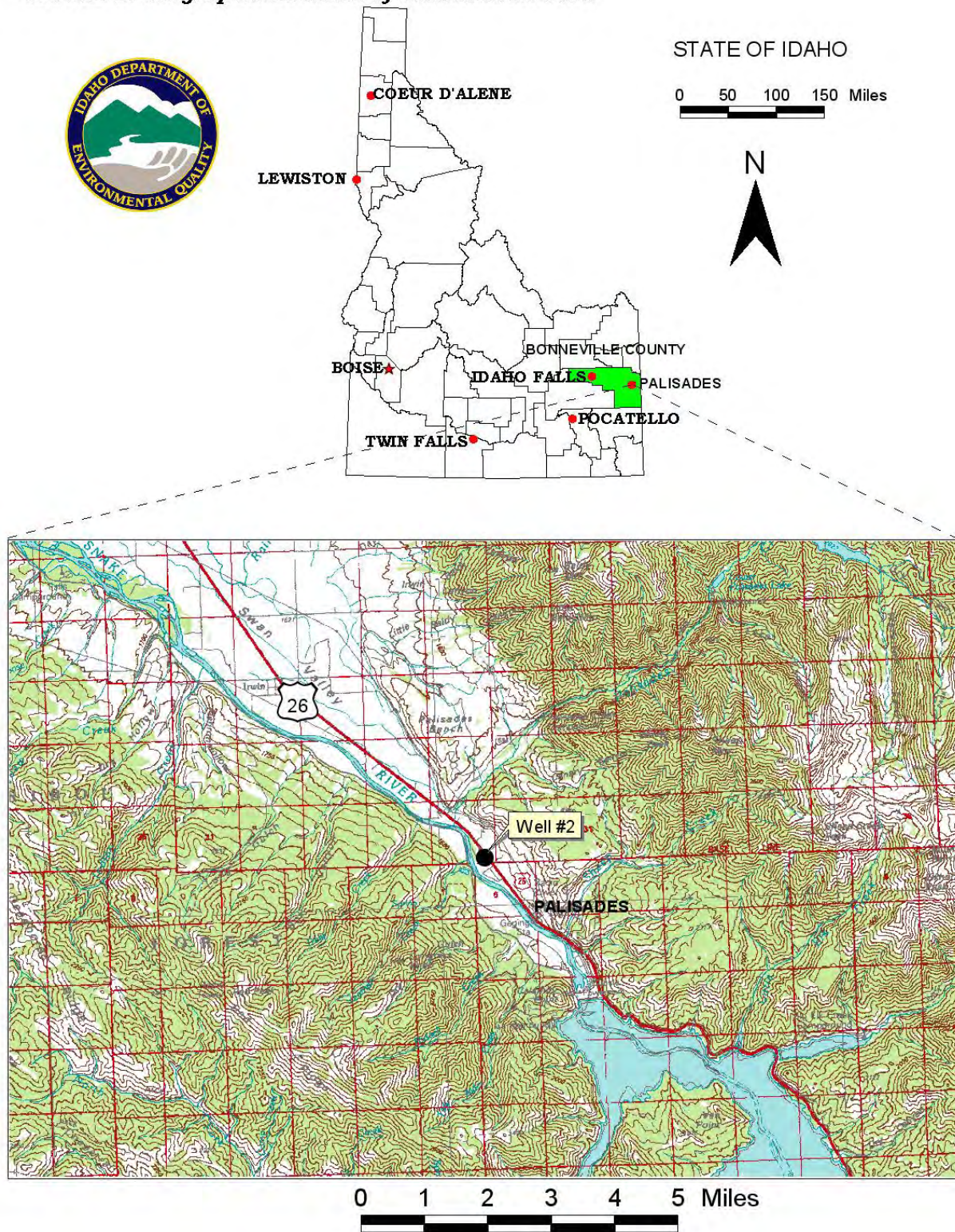
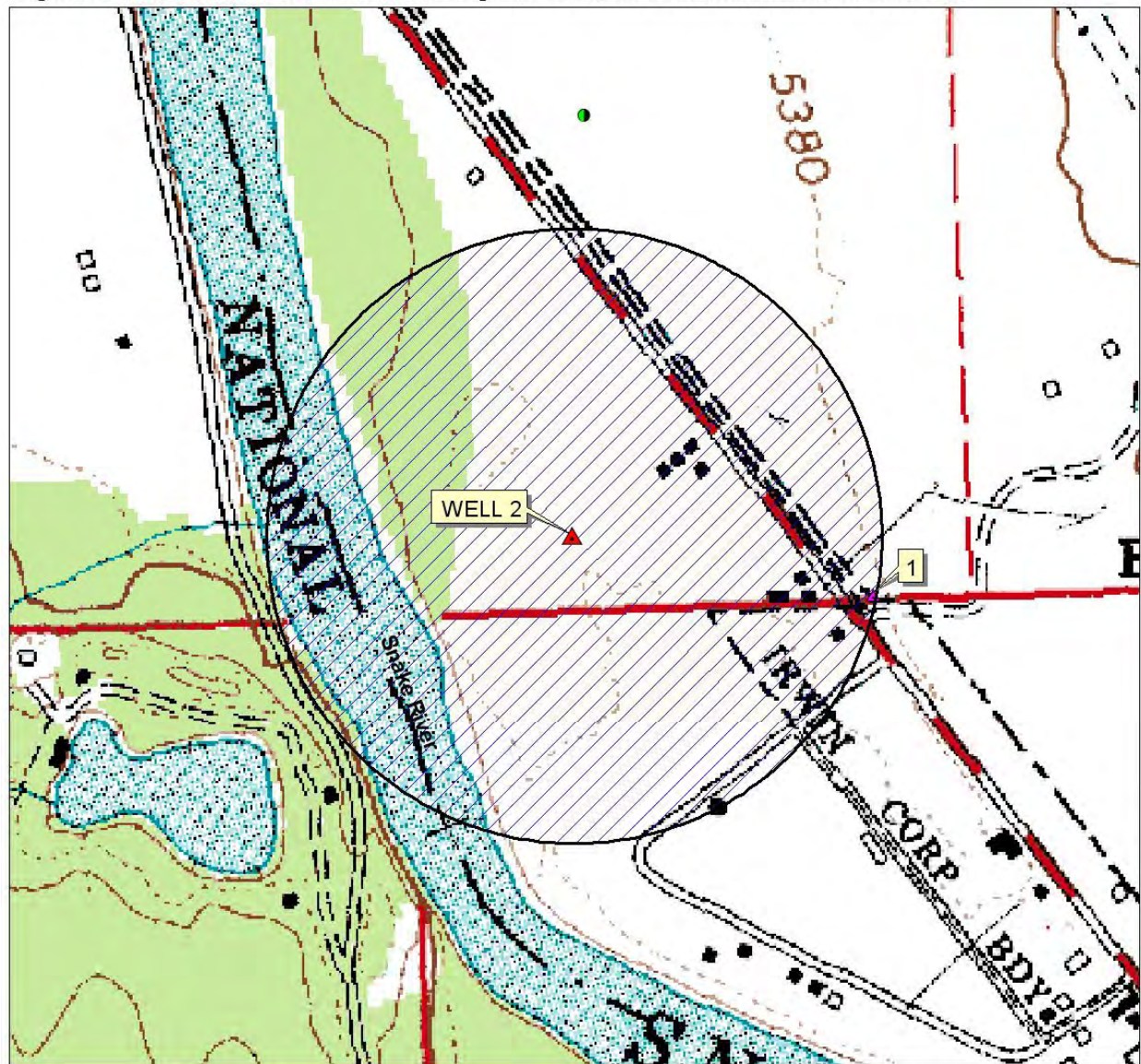


Figure 2. Palisades RV Park Delineation Map and Potential Contaminant Source Locations



0 0.5 1 Miles



PWS# 7100122
WELL 2

Potential Contamination

The potential contaminant sources identified within the delineated area include Highway 26, the Snake River, and a gas station (see Table 1 and Figure 2). If an accidental spill occurred along these transportation corridors within the delineation area, then IOC's (e.g. nitrate), VOCs (e.g. petroleum products), SOC's (e.g. pesticides), and microbial contaminants (e.g. bacteria) could be added to the ground water.

Table 1. Palisades RV Park Potential Contaminant Inventory

Map ID	Source Description	Source of Information	Potential Contaminants ¹
1	UST – open, gas station	Database search	VOC, SOC
	Highway 26	GIS Map	IOC, VOC, SOC, M
	Snake River	GIS Map	IOC, VOC, SOC, M

¹IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

Susceptibility Analysis

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheet. The following summaries describe the rationale for the susceptibility ranking.

The hydrologic sensitivity was rated high for the well. This rating is based upon multiple factors. The soil rates as moderate- to well drained as defined by the Natural Resource Conservation Service. No well log was available to discern the composition of the vadose zone, the depth of the water table, or the presence of a low permeability layer. Each of these components of the scoring system is conservatively marked higher. Providing a well log for the well could lower the score after an assessment is made as to whether conditions allow for the reduction in speed of infiltrating potential contaminants, as discussed in the SWA Plan (DEQ, 1999).

The well system construction score was rated moderate. Well #2 has been recently upgraded to include a properly vented sanitary seal and casing extended to at least 12 inches above ground surface. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. Standard 3.2.4.1 requires all PWSs to have yield and drawdown tests that last "24 hours or until stabilized drawdown has continued for six hours at 1.5 times" the design pumping rate (IDEQ, 1997). Also, the SWA Plan (DEQ, 1999) identifies that having 100 feet of water column before screening provides a buffering capacity to infiltrating contaminants. Since there is not a well log available for Well #2 it is unknown whether the proper drawdown test was run or if there is 100ft of water column before screening.

The Palisades RV Park Well #2 rated moderate (Table 2) for potential contaminant sources and land use for IOCs (e.g., nitrates), VOCs (e.g., petroleum products), SOC (e.g. pesticides), and microbial contamination (e.g., total coliform). Highway 26, the Snake River, and the gas station added to the rankings all types of contamination. In addition, the land use survey identified that agricultural land predominated the area and the county level use of nitrogen fertilizer, herbicide, and total agricultural chemicals rated high.

The final susceptibility ranking for Well #2 is high for all types of contaminants (see Table 2). Sources within 50 feet of the wellhead can give an automatic high score for the type of contaminant in question. A copy of the susceptibility analysis for the Palisades RV Park well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Table 2. Summary of Palisades RV Park Susceptibility Evaluation

	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory ²				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbial		IOC	VOC	SOC	Microbial
Well #2	H	M	M	M	M	M	H	H	H	H

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

²IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Protection Activities

For the Palisades RV Park water system, drinking water protection activities should focus on maintaining the requirements of the sanitary survey. If Well #1 is ever considered for use as a drinking water source, the bathroom must be moved and the casing extended to 12 inches above ground surface. Well #2 needs to be disconnected from the irrigation system and used primarily for drinking water. Backflow prevention devices must be installed on both Well #1 & #2. It is recommended that Well #1 uses a Double Check Valve Assembly (DCVA) and that Well #2 use either the DCVA or the Reduced Pressure Backflow Preventer (RPBP). In addition to a DCVA or RPBP device, it would be beneficial to install a Pressure Type Vacuum Breaker on all Frost Free Hydrant hose bibs. No chemicals should be stored or applied within 50 feet of the well. Any releases on the highway or in the river within the delineation boundary should be evaluated and the drinking water should be evaluated following such a release. Working with the local soil

and conservation district and Bonneville County will better inform the water system operator of chemicals that may be applied or stored near the drinking water well. The water system operator is also encouraged to develop a drinking water protection plan to document and rank potential contaminant sources, assess protection efforts, and provide education for staff and the public about the drinking water.

Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

Assistance

A water system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact Jack Rainey in the Idaho Department of Environmental Quality Idaho Falls Regional Office at (208) 528-2650.

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few heads to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory

References Cited

Idaho Department of Environmental Quality, 1999. Source Water Assessment Plan.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

The final scores for the **Palisades RV Park** susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	Unknown				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain and protected from surface flooding	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	UNDETERMINED AGRICULTUE	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	3	3	2
(Score = # Sources X 2) 8 Points Maximum		4	6	6	4
Sources of Class II or III leacheable contaminants or 4 Points Maximum	YES	6	3	2	
Zone 1B contains or intercepts a Group 1 Area	NO	4	3	2	
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		0	0	0	0
		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	13	12	8
Cumulative Potential Contaminant / Land Use Score		16	15	16	10
Weighted Potential Contaminant / Land Use Score		4	4	4	4
4. Final Susceptibility Source Score		14	14	14	14
5. Final Well Ranking		High	High	High	High